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Levodopa Dependence: A Case Report

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Summary

A case of Parkinson's Disease in a woman of 60 years, who developed a dependence on levodopa is presented. The psychic effects reported by the patient were sedation, sleep inducement, and analgesia.

Levodopa-Abhängigkeit: Ein Fallbericht

Es wird ein Fall einer 60jährigen Patientin mit Morbus Parkinson beschrieben, die eine Abhängigkeit von Levodopa entwickelte und als psychische Wirkung einen sedativen, schlafanstoßenden und analgetischen Effekt beschrieb.

Introduction

Since the introduction of levodopa for use in the treatment of Parkinson's disease psychic side-effects have been observed dependent on dosage, apart from neurological complications (hyperkinesia). These side-effects take the form of states of confusion or of depression as well as psychotic episodes of a predominantly paranoid-hallucinatory nature (*Dukes*, 1980). We observed a female patient in our hospital who developed a dependence on levodopa as a result of experienced effects of sedation, sleep inducement, and analgesia.

Case Report

The first symptoms of Parkinson's disease were observed in a woman at the age of 49 years (now 60) with an unconspicuous personal and family medical history. At that time the patient had generally felt well. A medical examination revealed only a rest tremor of medium frequency in the left extremities, and an associated lesser secondary movement of the left arm was observed in walking. After admission to a neurological hospital, treatment was begun with several antiparkinsonian drugs, of which levodopa was one. The patient, an office employee, was retired prematurely at the age of 51. The patient told us that over the years she had to take more and more tablets, increasing the dose until at one point she was taking up to 5 g per day and 2.5 g at a time. She explained that this was not due to any antiparkinsonian effect, but because levodopa made everything "so easy" for her: She had no problems anymore, was without pain and could sleep well. She had taken levodopa as an analgesic, soporific, and sedative.

On three occasions attempts were made by means of inpatient treatment to adapt the patient to a new medication: On each occasion the patient left the hospital after 1 or 2 days, protesting that she could not sleep and that not enough had been done to help her. The additional prescription of a decarboxylase inhibitor during out-patient treatment showed no improvement other than the fact that she reported that the new dosage of 62.5 mg was no longer quite as "drastic" as the former one. She claimed that other sleeping-pills or analgesics, even other parkinsonian drugs, such as amantadine, had not helped her the same way.

Occasionally when fewer tablets were available to the patient, she did not become aware of an intensification of the parkinsonian symptoms. However, she became increasingly restless, was unable to sleep, and felt pain particularly in her left knee. Repeated examination could reveal no cause for these pains.

"When nothing else helps, levodopa helps everything!" It put her into a state similar to that of intoxication, although she could not report experiencing any psychotic symptoms as such. She would take it when she had pain, when she had problems in general, when – on occasion – she felt giddy when walking, or – more often – restless at night, as well as regularly as a sleeping-pill. There were no extrapyramidal symptoms which could have indicated an overdose. The patient's husband stated that according to his observations the tablets were particularly helpful to his wife in the case of restlessness and sleeplessness. No evidence was found for previous addictive behaviour.

After admission to this hospital, a general medical examination of the patient did not reveal any significant symptomatology. X-ray and laboratory chemical tests showed completely normal findings, apart from a slight increase in the BSR and a subtle hyperlipidaemia.

The neurological examination revealed a minimal rest and static tremor, a moderate rigidity accentuated in the arms, and a more evident hypokinesia. Because of this, the patient's mobility was impaired when getting up, walking, etc., but at no time did she appear to be seriously disabled; even after the patient had received no levodopa for 12 hours over night, whereupon a dose of 4 x 125 mg levodopa with decarboxylase inhibitor was administered at her request, there was no apparent influence on the intensity of the parkinsonian symptoms.

However, a relaxing and sedative effect was observed. The patient was friendly, but reserved, sometimes tense and inaccurate in her account of her medical history, especially

in respect of chronological associations. She refused point-blank either any alternative to levodopa or drastic reduction in dosage, her motive for in-patient treatment becoming unclear. She recommended fellow-patients to "take a handful as well", it was "like hashish". Then, she refused further treatment, stating that she was unable to bear the pain centered mainly around her left knee, and wanted to take her pills by herself again. Placebo substitution was not possible because the patient insisted on being discharged. For the same reason the course and symptoms of enforced drug withdrawal could not be observed.

Discussion

The patient appears quite clearly to have taken levodopa over a long period and in increased dosage by reason of a psychotropic effect. A dependence developed: Reduction of the dosage led immediately to states of restlessness and of sleeplessness, and in order to preclude these states, the patient continued to take the tablets at the dosage level she was used to.

The manufacturer informed us that several cases are known in which patients have increased unaccountably the dosage without medical authorisation. It is possible that hey hoped thereby to increase the antiparkinsonian effect of the drug. *Vogel* and *Schiffter* (1983) reported the case of a patient, where an addictive misuse occurred in conjunction with the subjective experience of hypersexuality. They drew attention to the acknowledged fact that patients feel better, if they are on a dosage which leads to hyperkinesia, and that they prefer this to being even slightly hypokinetic. A withdrawal syndrome has also been observed after stopping levodopa treatment, although in this case carbidopa, amantadine, and biperiden had been withdrawn simultaneously (*Fastner,* 1983). However, a reaction such as that observed in our patient is not reported in the literature available to us.

It remains questionable whether levodopa has any effect upon the actual parkinsonian symptoms in the reported patient – phenomena, such as that of the on-off effect were definitely not observed. The psychic effects occurred independently from any possibly developed tolerance to the neurological effect, and were not affected by other antiparkinsonian drugs, such as amantadine. Even other analgesics and hypnotics had no effect compared to levodopa. It is not possible to ascertain whether the reported observation is due to a directly pharmacological effect, or whether the dependence developed by means of an operant conditioning through the experience of earlier pleasant states of mind in conjunction with the antiparkinsonian effect.

References

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